# Job Risk Assessment

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| **Document Control No.:** ***WRA-08-2*** | **Date Completed:** 8/9/2010 | **Location:** Yerington Mine Site |
| **Project Name:** **Vadose Zone Investigation Work Plan Sub-Surface Utilities (Pipelines) and Dry Well Survey** **PRELIMINARY (pre-contractor participation)** | **Job Description:** Spectrum Geophysics will conduct a comprehensive sub-surface investigation of the sub-surface lines and the Dry Wells to: 1) locate detectable dry wells within a 200-foot radius of the five locations identified by CH2M Hill; 2) determine the geometry of identified underground utilities; and 3) assess the condition of camera-accessible sub-surface utility lines. | **Risk Assessment Leader:** Penny Bassett<br>**Risk Assessment Team:**<br>**WRA Reviewed & Authorized to Proceed:**<br>**SIMOPS:** ☐ YES ☑ NO **Designated PIC:** To be determined |

| Work Plan (List Job Steps)<br>List the jobs required to complete the project scope in the sequence they are carried out. | Any tools or heavy equipment needed?<br>If YES, What Type | Is this a SIMOP?<br>If YES, Include in Mitigation Plan. | Do any of the *Golden Rules of Safety* apply?<br>If YES, Which of the 8? | Which of the 8 energy or biological root sources could possibly be involved in this job? | **What** would be the result of exposure to a biological or energy source? (e.g., Bites, Slips, trips, falls, exposures, electrocution, injury, death, etc.); and **How, where, or when** could an uncontrolled release or unwanted contact with a biological or energy<br>**Note:** Humans are biological sources, and their physical abilities, competency, and training should also be considered here. | Environmental Impacts<br>Could there be a release to the air, soil or water, and or, will a waste be generated? If YES, What? | Pre-Mitigation Risk Evaluation: Frequency | Consequence | Likelihood | Risk Score | Permit(s) Required?<br>If YES, What kind? | Energy / Biological / Waste Management Plan<br>List control measures required to eliminate, control, or protect against unwanted contact with an uncontrolled biological or energy source to minimize the risk of injury or environmental Impact.<br>**Hierarchy of Controls:** Elimination, Substitution, Isolation, Engineering/ Administrative, PPE | Who is responsible for Hazard Mitigation?<br>Name or Title | Post-Mitigation Risk Evaluation: Frequency | Consequence | Likelihood | Risk Score |
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| **General Hazard: Biological**<br>- Stinging insects<br>- Scorpions, snakes | No | No | No | Biological | **Insects:** Insect stings can cause allergic reaction, even in those not previously known to be allergic. Can cause respiratory distress, itching, pain, rash.<br>**Scorpions/snakes:** Scorpion sting is a lot like a wasp sting, very painful; can be very hard to see until you are right on them; tend to be most active a dawn & dusk. | No | Unusual Exposure | Serious Consequence | Unusual but possible | Low Risk | No | **Insects:** Identify workers with special sensitivities and be prepared with emergency treatment; keep Sting-Ez at job site to provide relief from pain and rash; monitor worker for worsening reaction for ~2 hrs.<br>**Scorpions/snakes:** Inspect work area before setting up; rattle nearby bushes with stick. | All workers | Unusual Exposure | Important Consequence | Conceivable but unlikely | Minimal Risk |
| **General Hazard: Driving**<br>- Mine site roads<br>- Public roads in town (low speeds)<br>- Public highways (high speeds) | No | No | Yes<br>Driving Safety | Motion<br>Biological | **Mine roads:** Areas with steep embankments; potential heavy equipment on roads.<br>**Town roads:** Low speed collision with other drivers or pedestrians; drunk drivers.<br>**Highways:** High speed collision or loss of control with v. serious consequence; drunk, reckless, or distracted drivers. | No | Frequent Exposure | Very Serious Consequence | Unusual but possible | High Risk | No | ***All Driving: No use of cell phone or other distractions while vehicle is moving.**<br>**Mine roads:** Observe mine speed limit of 25 mph; be aware of other activity on site.<br>**Town roads:** Observe posted speed limit; be aware of pedestrians and other drivers.<br>**Highways:** Observe posted speed limit; avoid passing on 2-lane hwys if possible; drive with daytime headlights to be more visible. | All workers | Frequent Exposure | Serious Consequence | Remotely possible | Low Risk |
| **General Hazard: Weather**<br>- Heat stress (hot summer weather)<br>- Cold stress (cold mornings)<br>- High wind conditions & dust storms<br>- Rain & electrical storms<br>- Snow storms | No | No | No | Thermal<br>Motion<br>Electrical | **Heat stress:** Thermal hazard in summer months, workers can become dehydrated, disoriented, less aware of hazards if overheated, sunburn.<br>**Cold stress:** Cold mornings and/or wet conditions can cause cold stress; workers lose dexterity, distracted, potential frost bite.<br>**Wind:** Wind speeds of 20-40 mph are not uncommon, can blow loose items to strike workers, dust can cause limited visibility or irritants in the eyes.<br>**Rain/electrical storm:** Lightning strike to person or equipment could cause burn or electrocution; rain can make walking surfaces slippery and contribute to cold stress.<br>**Snow:** Heavy snow and create white-out with limited visibility; slippery driving conditions. | No | Occasional Exposure | Very Serious Consequence | Unusual but possible | Substantial Risk | No | **Heat Stress:** Maintain enough water at the work site to keep workers hydrated; provide shade when posisble; monitor worker condition for signs of heat stress.<br>**Cold Stress:** Workers should wear sufficient clothing, change out of wet clothing if possible; be aware of limited desterity; monitor worker condition for signs of cold stress.<br>**Wind:** Tie down or contain loose items on windy days (tent canopy, boxes, etc); shut down operations if winds become severe.<br>**Rain/electrical storm:** Shut down operations on drill rig if lightning visible anywhere on horizon, wait 30 minutes since last strike to restart; be aware of slippery surfaces and put down materials to create traction if posisble.<br>**Snow:** Stop work if visibility is too restricted in white-out condition; do not attempt to drive in white-out if you cannot adequately see the road. | All workers | Occasional Exposure | Serious Consequence | Remotely possible | Low Risk |
| **A. Dry well survey & location**<br>- Walk survey area in 200' radius around suspected dry well location<br>- Use various hand-held or buggy mounted survey equipment (electro-magnetic metal detector, ground penetrating radar, terrain conductivity meter, M-scope metal detector)<br>- Spray paint or place survey stakes at locations of identified underground occurances | Yes<br>Geophysical survey equipment | No | No | Motion<br>Gravity<br>Biological | **Motion/gravity** - Slip/trip hazards from walking on uneven ground surface and areas with physical obstruction and demolition debris. Potential to step on nail, twisted ankle, cuts/splinters on metal sheeting or wood debris. Potential to fall into unprotected open basements or trenches. Loss of traction on steep embankments. Tripping hazard on GPR cables. Potential splinters or smashed finger when pounding stakes into ground.<br>**Biological** - Potential for snakes, scorpions and insects in all parts of the Process Area, specifically in protected areas under debris or near brush. | No | Frequent Exposure | Serious Consequence | Unusual but possible | Substantial Risk | No | **Motion** - Wear boots that come above the ankle for support and select appropriate walking pathway to avoid walking on debris or steep slopes. If workers must pick up and handle debris to move out of way, only do so with leather gloves to protect hands and carefully inspect for presence of snakes/scorpions. Contain GPR cables or mark with cones or flags to make visible.<br>**Biological** - Train workers to recognize potential wildlife, to inspect areas and to be vigilant. | Spectrum surveyor | Frequent Exposure | Serious Consequence | Conceivable but unlikely | Low Risk |
| **B. Sub-surface pipeline survey and location marking**<br>- Walk survey area for designated suspected pipelines<br>- Use various hand-held or buggy mounted equipment<br>- Spray paint or place survey stakes to mark locations<br>- Draw map and/or GPS locations | Yes<br>Geophysical survey equipment | No | No | Motion<br>Gravity<br>Biological | **Same hazards as Task A.** | No | Frequent Exposure | Serious Consequence | Unusual but possible | Substantial Risk | No | **Same mitigation as Task A.** | Spectrum surveyor | Frequent Exposure | Serious Consequence | Conceivable but unlikely | Low Risk |
| **C. Pipeline interior video and survey**<br>- Place a transmitter on a fiberglass probe and push into pipeline through manhole or other access point<br>- Walk surface with receiver to mark pipeline location<br>- Place video camera on fiberglass probe to video pipe interior | Yes<br>Geophysical survey equipment | No | No | | **Motion/gravity** - Heavy lifting and pinch points when opening manholes, potential for smashed finger, crushed toes, back or muscle strain. Potential to fall into open manhole when feeding fiberglass probe into pipeline. Slip/trip hazards from uneven ground surface when walking with receiver. Potential for transmitter or camera to become stuck in pipeline and require forcefull pulling or other methods (digging up pipe?) to retrieve.<br>**Chemical** - Potential to encounter hazardous atmosphere when opening lids of vaults or manholes.<br>**Other** - Potential to encounter permit and non-permit required confined spaces in vault and manhole spaces. These have potential hazardous atmosphere or entrapment hazards. | No | Occasional Exposure | Disastrous Consequence | Unusual but possible | High Risk | No | **Motion/gravity** - Use a manhole puller to open manholes or vault lids, do not do it by hand unless there is a designated handle to pull. Set up an exclusion zone around open vault/hole to prevent unauthorized entry, however, surveyor must work in close proximity to allow feeding the probe into hole. Close and re-secure vault lids when done.<br>**Chemical** - Use 4-gas air monitor to test air quality in all opened vaults. Since all pipelines except active sewer lines are inactive, air quality is not expected to change, however air monitoring should be reconfirmed at least hourly while working around an open vault. Air monitoring should be done continuously around vaults connected to active sewer lines.<br>**Other - **ENTRY INTO CONFINED SPACES IS NOT AUTHORIZED for this job. If entry is required, authorization must be given by ARC PM and safety risk assessments and training must be completed prior to proceeding.**** | Spectrum surveyor | Occasional Exposure | Serious Consequence | Remotely possible | Low Risk |